

Halliburton Docket No.: 990084 U1C1 USA
Attorney Docket No.: 1301-1125

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application: Leidel et al.
Serial No.: 10/080,785
Filed: February 22, 2002
Art Unit: 1742
Confirmation No.: 2977
Examiner: Daniel J. Jenkins
For: High Performance Powdered Metal Mixtures for Shaped Charge Liners

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Pre Appeal Brief Request for Review

Dear Sir:

This Request is being filed in connection with a Notice of Appeal.

Status

Claims 1-5, 7-12, 14-25, 29-41 and 45-60 are presently pending of which claims 1, 9, 23, 29, 35, 39, 45, 51, 55 and 58 are in independent form. The Examiner has rejected claims 1-2 and 7 under 35 U.S.C. §103(a) as being unpatentable over US 3,888,636 to Schzerzenie. The Examiner has rejected claims 1-2, 7-10 and 15-21 under 35 U.S.C. §103(a) as being unpatentable over Schzerzenie and US 5,656,791 to Reese et al. The Examiner has rejected claims 3-4 and 11-21 under 35 U.S.C. §103(a) as being unpatentable over Schzerzenie, Reese, US 6,158,351 to Mravic and the Goetzel article. The Examiner has rejected claims 5 and 14 under 35 U.S.C. §103(a) as being unpatentable over Schzerzenie, Reese and US 5,913,256 to Lowden et al. The Examiner has rejected claims 23, 29, 33, 35, 39, 45, 49, 51, 55 and 58 under 35 U.S.C. §103(a) as being unpatentable over Schzerzenie, Reese, US 4,498,395 to Kock et al. and US 5,279,787 to Oltrogge. The Examiner has rejected claims 24-25, 30-31, 36-37, 40-41, 46-47, 52-53, 56-57 and 59-60 under 35 U.S.C. §103(a) as being unpatentable over Schzerzenie, Reese, Kock, Oltrogge, Mravic and

Goetzel. The Examiner has rejected claims 32, 34, 38, 48, 50 and 54 under 35 U.S.C. §103(a) as being unpatentable over Schzerzenie, Reese, Kock, Oltrogge and Lowden. (See 3/17/06 Office Action).

Independent Claims 1 and 9 are Patentable over Schzerzenie and Reese

Independent claims 1 and 9 have been rejected as being unpatentable over Schzerzenie either along or in combination with Reese, however, the teaching Schzerzenie are directed to a non-analogous field of art.¹ The question asked in determining whether references are in an analogous art is whether an inventor in that field of endeavor would have logically been exposed to that art, from an objective point of view.² Schzerzenie is directed to a tungsten based alloy which includes minor portions of nickel and iron for use in preformed penetrators for armor-piercing projectiles that achieve the properties of high ductility, high strength and high density. (Schzerzenie, col. 1, lines 14-46). The present invention, as recited in claims 1 and 9, is directed to a mixture of powdered tungsten and powdered metal binder to form a liner for a shaped charge. Similarly, Reese is directed to a liner for a shaped charge formed from a particular mixture of powdered metals. The shaped charges described in Reese are for use in downhole perforating operations. Specifically, Reese describes the purpose of the shaped charges as follows:

Shaped charges are used for the purpose, among others, of making hydraulic communication passages, called perforations, in wellbores drilled through earth formations so that predetermined ones of the earth formations can be hydraulically connected to the wellbore. Perforations are needed because wellbores are typically completed by coaxially inserting a pipe or casing into the wellbore, and the casing is retained in the wellbore by pumping cement into the annular space between the wellbore and the casing. The cemented casing is provided in the wellbore for the specific purpose of hydraulically isolating from each other the various earth formations penetrated by the wellbore.

Shaped charges known in the art for perforating wellbores can include a housing, a quantity of high explosive . . . inserted into the housing, and a liner which

¹ See *In re Oetiker*, 977 F.2d 1443, 24 U.S.P.Q.2d (BNA) 1443 (Fed.Cir. 1992) (holding that a prima facie showing of obviousness can be overcome by showing that the obviousness is in a non-analogous field of art).

² *Wang Lab. Inc. v. Toshiba Corp.*, 993 F.2d 858, 26 U.S.P.Q.2d (BNA) 1767 (Fed. Cir. 1993).

is inserted onto the high explosive. . . . When the high explosive is detonated, the force of the detonation collapses the liner and ejects it from one end of the charge at very high velocity in a pattern called a "jet". The jet penetrates the casing, the cement and a quantity of the formation. (Reese, col 1, lines 23-35).

As those skilled in the art of shaped charge perforating guns will understand, the "jet" formed upon the detonation of a shaped charge is not a solid object, such as the projectile of Schzerzenie, but instead, the "jet" formed upon the detonation of a shaped charge is a high-energy stream of gases and particles. As such, the metallurgy associated with a projectile, such as that of Schzerzenie, does not provide any teaching relevant to the design of a liner for a shaped charge, such as that of the present invention or Reese. An inventor in the field of shaped charge liners would not, from an objective point of view, have been logically exposed to the projectile art. As such, the projectile of Schzerzenie and the shaped charge liner of the present invention and of Reese are in non-analogous arts. Accordingly, the rejection of claims 1 and 9 should be withdrawn.

Independent Claims 23 and 39 are Patentable over Schzerzenie, Reese, Kock and Oltrogge

Independent claims 23 and 39 have been rejected as being unpatentable over Schzerzenie, Reese, Kock and Oltrogge, however, the combination of references fails to teach each limitation of claims 23 and 29. Specifically, none of the art cited by the Examiner either alone or in combination teaches, suggests or discloses powdered tungsten in a mixture with a powdered metal binder including lead and a metal selected from the group comprising tantalum, molybdenum and combinations thereof for use in a liner for a shaped charge. Schzerzenie is non-analogous art and teaches only W-Ni-Fe combinations. Similarly, Kock and Oltrogge are non-analogous art and fail to teach W-Pb-Ta, W-Pb-Mo or W-Pb-Ta-Mo. Reese fails to teach W-Pb-Ta, W-Pb-Mo or W-Pb-Ta-Mo. (See Response dated 11/21/05, pages 25-31). Accordingly, the combination of references fails to teach at least one limitation explicitly recited in each of claims 23 and 29.

Independent Claims 29 and 45 are Patentable over Schzerzenie, Reese, Kock and Oltrogge

Independent claims 29 and 45 have been rejected as being unpatentable over Schzerzenie, Reese, Kock and Oltrogge, however, the combination of references fails to teach each limitation of claims 29 and 45. Specifically, none of the art cited by the Examiner either alone or in combination

teaches, suggests or discloses powdered tungsten in a mixture with a powdered metal binder including lead and tantalum for use in a liner for a shaped charge. Schzerzenie is non-analogous art and teaches only W-Ni-Fe combinations. Similarly, Kock and Oltrogge are non-analogous art and fail to teach W-Pb-Ta. Reese fails to teach W-Pb-Ta. (See Response dated 11/21/05, pages 25-31). Accordingly, the combination of references fails to teach at least one limitation explicitly recited in each of claims 29 and 45.

Independent Claims 35 and 51 are Patentable over Schzerzenie, Reese, Kock and Oltrogge

Independent claims 35 and 51 have been rejected as being unpatentable over Schzerzenie, Reese, Kock and Oltrogge, however, the combination of references fails to teach each limitation of claims 35 and 51. Specifically, none of the art cited by the Examiner either alone or in combination teaches, suggests or discloses powdered tungsten in a mixture with a powdered metal binder including lead and molybdenum for use in a liner for a shaped charge. Schzerzenie is non-analogous art and teaches only W-Ni-Fe combinations. Similarly, Kock and Oltrogge are non-analogous art and fail to teach W-Pb-Mo. Reese fails to teach W-Pb-Mo. (See Response dated 11/21/05, pages 25-31). Accordingly, the combination of references fails to teach at least one limitation explicitly recited in each of claims 35 and 51.

Independent Claims 55 and 58 are Patentable over Schzerzenie, Reese, Kock and Oltrogge

Independent claims 55 and 58 have been rejected as being unpatentable over Schzerzenie, Reese, Kock and Oltrogge, however, the combination of references fails to teach each limitation of claims 55 and 58. Specifically, none of the art cited by the Examiner either alone or in combination teaches, suggests or discloses powdered tungsten in a mixture with a powdered tantalum for use in a liner for a shaped charge. Schzerzenie is non-analogous art and teaches only W-Ni-Fe combinations. Similarly, Kock and Oltrogge are non-analogous art and fail to teach W-Ta. Reese fails to teach W-Ta. (See Response dated 11/21/05, pages 25-31). Accordingly, the combination of references fails to teach at least one limitation explicitly recited in each of claims 55 and 58.

Dependent Claims 32, 34, 38, 48, 50 and 54 are Patentable over Schzerzenie, Reese, Kock, Oltrogge and Lowden

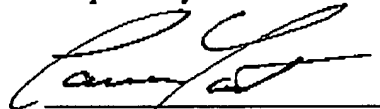
Dependent claims 32, 34, 38, 48, 50 and 54 have been rejected as being unpatentable over Schzerzenie, Reese, Kock, Oltrogge and Lowden, however, the combination of references fails to teach each limitation of these claims. Specifically, none of the art cited by the Examiner either alone or in combination teaches, suggests or discloses powdered tungsten in a mixture with a powdered metal binder including lead, copper and a metal selected from the group comprising tantalum, molybdenum and combinations thereof for use in a liner for a shaped charge. Schzerzenie is non-analogous art and teaches only W-Ni-Fe combinations. Similarly, Kock and Oltrogge are non-analogous art and fail to teach W-Pb-Ta-Cu, W-Pb-Mo-Cu or W-Pb-Ta-Mo-Cu. Reese fails to teach W-Pb-Ta-Cu, W-Pb-Mo-Cu or W-Pb-Ta-Mo-Cu. Lowden is non-analogous art and fails to teach W-Pb-Ta-Cu, W-Pb-Mo-Cu or W-Pb-Ta-Mo-Cu. While Lowden discusses powder metallurgy and shaped charges, the powdered metals discussed in Lowden are for use as the case of the shaped charge not the liner of the shaped charge. (Lowden, col. 13, line 66 - col. 14, line 13). Accordingly, the combination of references fails to teach at least one limitation explicitly recited in each of claims 32, 34, 38, 48, 50 and 54.

Conclusion

In view of the forgoing, the Panel is respectfully requested to allow claims 1-5, 7-12, 14-25, 29-41 and 45-60.

Dated this 19th day of June, 2006.

Respectfully submitted:



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